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Research Note

New record of *Hexamermis dactylocercus* Poinar Jr. and Linares (Nematoda: Mermithidae) parasitizing red hairy caterpillar, *Amsacta albistriga* (Walker) (Lepidoptera: Arctiidae) from India

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ABSTRACT: Natural parasitism of the red hairy caterpillar, *Amsacta albistriga* (Walker) by a mermithid nematode, *Hexamermis dactylocercus* Poinar Jr. and Linares is reported for the first time. Higher parasitisation by *H. dactylocercus* was recorded during epidemic outbreak of *A. albistriga* during 2007 (28.5%) and in 2008 (6.5%) when the pest incidence was relatively lower due to late onset of monsoon. The mermithid activity was associated with high rainfall in both the years. Seasonal dynamics of *H. dactylocercus* is discussed.

KEY WORDS: Nematode**,** mermithid**,** *Hexamermis dactylocercus,* red hairy caterpillar, *Amsacta albistriga*

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INTRODUCTION

Red hairy caterpillar, *Amsacta albistriga* (Walker) (Lepidoptera: Arctiidae), is a polyphagous and devastating pest of rainfed crops in Andhra Pradesh, Karnataka and Tamil Nadu. Several natural biocontrol agents have been reported to regulate its incidence under field conditions (Manjula and Sudheer, 2004; Gunathilagaraj and Babu, 1987; Veenakumari *et al*., 2008). Naturally occurring entomophagous nematodes are important regulatory factors of insect populations (Smart, 1995; Rahaman *et al.*, 2000). In order to observe the incidence of natural parasitoids, the red hairy caterpillar (RHCP) larvae were collected at regular intervals from the date of first appearance (21 June in 2007 and 11 August in 2008) till they completely disappeared from the fields at Haytahnagar Research Farm of Central Research Institute for Dryland Agriculture, Hyderabad. The soils at the farm are shallow (30-50 cm), *typic haplustalf* (red sandy loams) with organic carbon content of 0.4%. During 2007, 176 young (second and third instar) RHCP larvae were collected on four dates (21 June and 4, 7 and 17 July) and in 2008 about 57 larvae were collected on two dates (11 and 18 August). The larvae collected were transferred on the same day to individual plastic containers (6 cm diameter, 8 cm height) and fresh castor leaves were provided daily as food till pupation or death. The RHCP cultures were maintained in environmental test chambers at 27±1°C, 65% RH and 16: 8 photoperiod. Observations were recorded daily from all the individual larvae for parasitisation.

Thin, cream coloured nematode juveniles measuring 65-148 mm long and 0.08-0.28mm wide were found emerging from second and third instar larvae of *A. albistriga* from 2nd day onwards till 6 days. The number of juveniles emerging from each parasitized RHCP larva was 2.8 ± 0.7 and the host larvae were found dead within few hours after emergence of the nematodes. The parasitism of *A. albistriga* due to this nematode was in the range of 6.5-28.5%. These parasitic nematodes were identified as *Hexamermis dactylocercus* (Nematoda: Mermithidae). They were active for a brief period during June-July in 2007 and during August in 2008. Unidentified larval-pupal parasitoids belonging to Tachinidae (Diptera) were the only parasitoids other than mermithids recorded from RHCP in our study. However, activity of tachinids was confined to the later part of the season compared to mermithids which were more prevalent early in the season (Fig. 1).

Hexamermis dactylocercus was first described from *Aeneolamia varia* (Hemiptera: Cercopidae), a major pest of sugarcane in Venezuela (Poinar and Linares, 1985) and the per cent parasitism was up to 50 in some fields. Later it was reported as a parasitoid on little cicada of sugarcane, *Mahanarva posticata* (Cercopidae) from Brazil (Risko Briceno *et al.,* 1988). In India, *Hexamermis* sp. has been reported on *Serinetha augur* Fab. (Heteroptera: Coreidae),

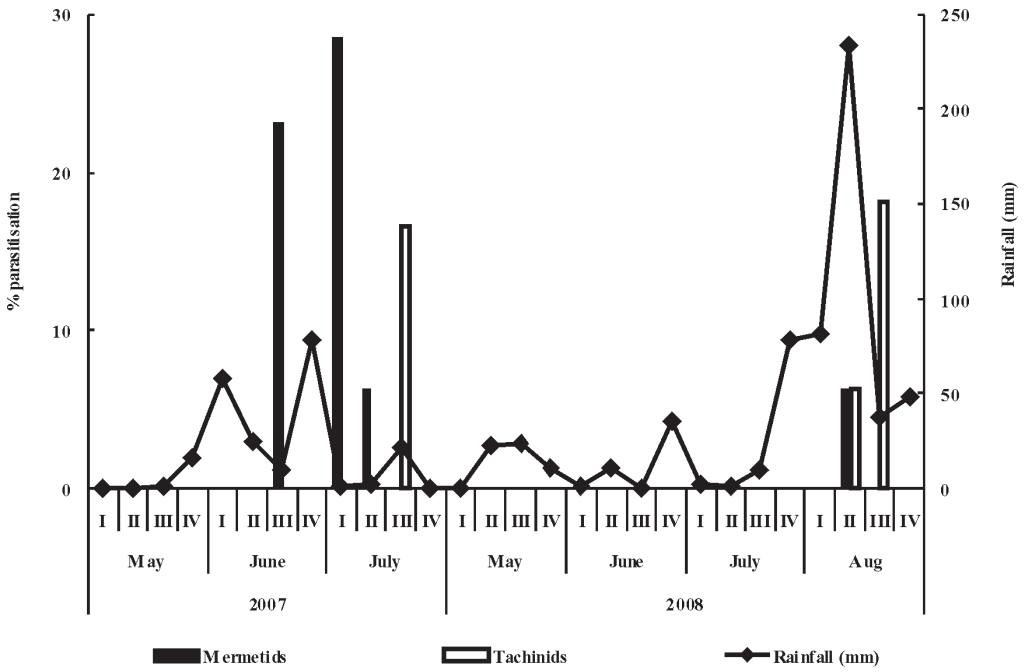

Fig. 1. Natural parasitism of red hairy caterpillar during 2007-08

a pest on kusum (*Schleichera oleosa*) (Dhiman, 1984) and on several lepidopteran species, *viz*., *Achaea janata* infesting castor (*Ricinus communis* L.); *Chilo partellus, Marasmia trapezalis* and *Mythimna separata* on sorghum (*Sorghum bicolor* L.Moench.)*; Cydia critica* and *C. ptychora* on pigeonpea (*Cajanus cajan* L. Millsp.*)*; *Lampides boeticus* on black gram (*Vigna radiata* L.Wilszek.), *Spodoptera litura* on groundnut (*Arachis hypogea* L.) and *Spodoptera exigua* on chickpea (*Cicier arietinum* L.) (Bhatnagar *et al.*, 1985). However, this is the first report of parasitisation of *A. albistriga* by *H. dactylocercus.*

It appears that parasitisation by *H. dactylocercus* in the present study was host density dependent, as higher level of parasitism was observed during the RHCP epidemic outbreak year of 2007 (28.5%) compared to 2008 (6.25%) when their incidence was relatively lower due to the late onset of monsoon rains. The activity of *H. dactylocercus* was also found associated with high rainfall in both the years (Fig. 1). Pre-monsoon showers in June were found to the stimulate activity of several species of entomopathogenic nematodes including *Hexamermis* sp. and *Ovomermis albicans* and parasitism by *Hexamermis* was higher in the early part of the season (Bhatnagar *et al*., 1985). Similarly, persistent moist environments were reported to favour highest levels of parasitism by *Mermis nigrescens* on grasshopper (Mongkolkiti and Hosford, 1971).

H. dactylocercus was found to be an important natural mortality factor regulating larval populations of *A. albistriga* under field conditions. The initiation of its activity is reportedly related to timely onset of monsoon rains, while its intensity is related to availability of susceptible host density coinciding with moist environment. However, despite its potential as a biological control agent for augmentative releases, lack of knowledge on rearing methods of this group of insects is a major limitation in using them. Hence, it is important to conserve these beneficial species by selective use of soil insecticides.

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